TECHNICAL MEMORANDUM

LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

TO: Carl Bach, The Boeing Company

FROM: Kristy Hendrickson

DATE: May 25, 2005

RE: CATCH BASIN SAMPLING AT NORTH BOEING FIELD

INTRODUCTION

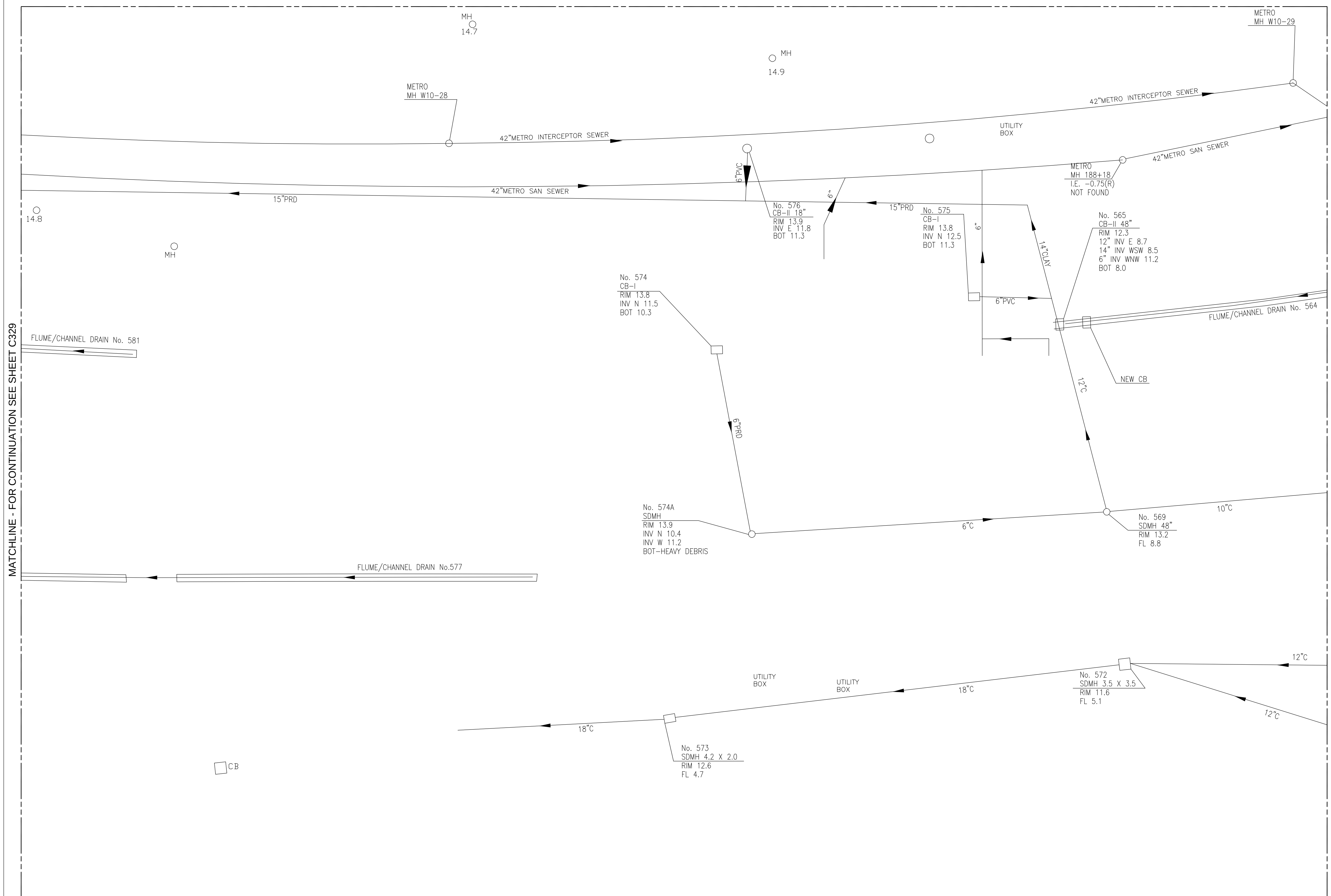
This memorandum provides historical analytical results for solid material samples from the storm system catch basins at the south end of North Boeing Field that are upstream of the 24-inch King County storm line draining through the north end of the Jorgensen property to the Duwamish Waterway. The property where these catch basins are located was previously leased by The Boeing Company (Boeing). One catch basin, No. 584 (also identified as Manhole-1-E), is located in the 24-inch storm line just before the line enters East Marginal Way South. Three catch basins (No. 565, No. 579, and No. 580) are each located at the outlet of a channel drain that discharges into the 24-inch storm line. The locations of catch basin No. 565 and channel drain No. 564 are shown on Drawing C328. The locations of catch basin No. 579 and channel drain No. 578, catch basin No. 580 and channel drain No. 581, and catch basin No. 584 are shown on Drawing C329. The 24-inch King County storm line also conveys water from east of the property formerly leased by Boeing. No information regarding concentrations of PCBs in this portion of the storm line is available to us.

Boeing personnel collected samples of solid material from catch basin No. 584 in 1997 and from all four catch basins (No. 565, No. 579, No. 580, and No. 585) in 2000 in conjunction with periodic removal and offsite disposal of catch basin solid material. The 1997 sample was analyzed for polychlorinated biphenyls (PCBs), metals, and heavy petroleum oils by the Boeing Information, Space and Defense Systems Environmental Analysis Laboratory. The 2000 samples were analyzed for PCBs, metals, selected volatile organic compounds, and total petroleum hydrocarbons by Boeing's Renton Environmental Laboratory. Solid material from the four catch basins was collected by Landau Associates personnel in 1998 and analyzed for PCBs by Analytical Resources, Inc. For both the 1998 and 2000 sampling, the samples from catch basins No. 579 and No. 580 are identified by the number of the channel drain where they are located, No. 578 and No. 581, respectively. Total detected PCB concentrations were less than 1 mg/kg in every sample from the three catch basins located in channel drains. Total PCB concentrations in catch basin No. 584, located in the 24-inch King County storm line, were 51 mg/kg in 1997, 31 mg/kg and 36 mg/kg in 1998, and 213 mg/kg in 2000. PCB results are summarized in Table 1,

647021

attached. Copies of the laboratory data sheets for these samples and the data validation memorandum for the 1998 sampling are also attached.

KJH:rgm
Attachments



LEGEND:

GENERAL NOTES:

CONSTRUCTION NOTES:

20' 10' 0 20' 40'
SCALE IN FEET

										C293	C292	C291	C290
								C299	C298	C297	C296	C295	C294
						C307	C306	C305	C304	C303	C302	C301	C300
C333	C332			C317	C316	C315	C314	C313	C312	C311	C310	C309	C308
C331	C330	C329	C328	C327	C326	C325	C324	C323	C322	C321	C320	C319	C318

KEY PLAN
SCALE : NONE
N

SYM	REVISION	BY	APPROVED	DATE	SYM	REVISION	BY	APPROVED	DATE

BOEING
FACILITIES DEPARTMENT

ACCEPTABILITY
THIS DESIGN AND/OR SPECIFICATION IS APPROVED

APPROVED BY	DEPT.	DATE

DRAWN BY J.OMALLEY — DATE 9.30.96
CHECKED
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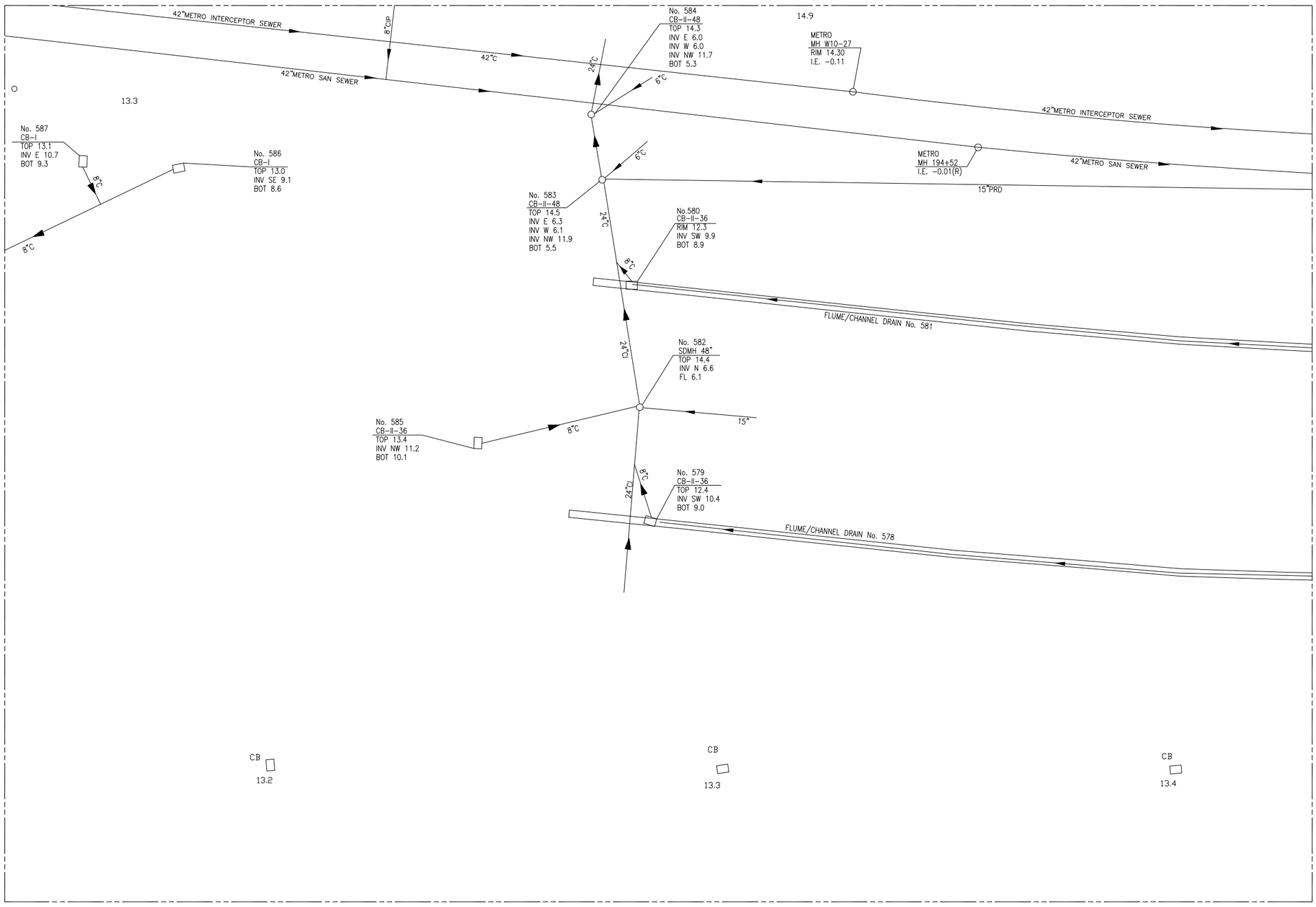
APPROVED

SUBTITLE
UTILITIES

TITLE
NORTH BOEING FIELD

CIVIL MASTER COL NBF

LAST REVISION — SYMBOL — DATE
SHEET C328
JOB NO. — COMP NO.
DWG NO. 3.YD-C328



LEGEND:

GENERAL NOTES:

CONSTRUCTION NOTES:

20' 10' 0 20' 40'
SCALE IN FEET

							C293	C292	C291	C290
						C299	C298	C297	C296	C295	C294
					C307	C306	C305	C304	C303	C302	C301	C300
C333	C332			C317	C316	C315	C314	C313	C312	C311	C310	C309	C308
C331	C330	C329	C328	C327	C326	C325	C324	C323	C322	C321	C320	C319	C318

KEY PLAN
SCALE = NONE

SYM	REVISION	BY	APPROVED	DATE

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BOEING
FACILITIES DEPARTMENT

ACCEPTABILITY
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APPROVED		
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SUBTITLE **UTILITIES**

TITLE **NORTH BOEING FIELD**

CIVIL MASTER COL NBF

	SYMBOL	DATE
LAST REVISION		
SHEET **C329**		
JOB NO.		COMP NO.
DWG NO. 3.YD-C329		

TABLE 1
CATCH BASIN SOLID MATERIAL
CATCH BASINS 565, 579, 580, AND 584
NORTH BOEING FIELD

Location:	CB-565	CB-565	CB-584	CB-584	CB-584-Dup	CB-584	CD-578 (a)	CD-578 (a)	CD-581 (b)	CD-581 (b)
Lab ID:	Y291D	59403	3920-32346	Y291G	Y291A	59406	Y291F	59404	Y291E	59405
Date Collected:	08/18/1998	05/21/2000	09/26/1997	08/18/1998	08/18/1998	05/21/2000	08/18/1998	05/21/2000	08/18/1998	05/21/2000
Analysis Method:	8081	8082	8082	8081	8081	8082	8081	8082	8081	8082
PCBs (mg/kg)										
Aroclor 1016	0.044 U			1 U	0.97 U		0.034 U		0.043 U	
Aroclor 1016/1242		0.01 U	0.05 U			2.31 U		0.02 U		0.02 U
Aroclor 1221	0.088 U			2 U	1.9 U		0.069 U		0.086 U	
Aroclor 1232	0.044 U	0.01 U	0.05 U	1 U	0.97 U	2.31 U	0.034 U	0.02 U	0.043 U	0.02 U
Aroclor 1242	0.044 U			1 U	0.97 U		0.034 U		0.043 U	
Aroclor 1248	0.044 U	0.01 U	0.05 U	1 U	0.97 U	2.31 U	0.034 U	0.02 U	0.043 U	0.02 U
Aroclor 1254	0.093	0.01 U	51	31	36	128	0.45	0.29	0.29	0.76
Aroclor 1260	0.038 J	0.05	0.05 U	1 U	0.97 U	85	0.4	0.14	0.31	0.21
Aroclor 1262	0 U	0.01 U	0.05 U	0 U	0 U	2.31 U	0 U	0.02 U	0 U	0.02 U
PCB, total	0.131	0.05	51	31	36	213	0.85	0.42	0.6	0.97

(a) Sample collected from Catch Basin No. 579.

(b) Sample collected from Catch Basin No. 580.

U = Indicates that the target analyte was not detected at the reported concentration.

J = Estimated concentration when the value is less than ARI's established reporting limits.

LABORATORY REPORT

ENVIRONMENTAL ANALYSIS LABORATORY
BOEING INFORMATION, SPACE & DEFENSE SYSTEMS
18-62 BLDG. M/S: 8J-55 PHONE: 773-8934

Report No.: 9-4190-LAB-3920

Report Date: 16-OCT-1997

To: Larry Petersen Orgn.: R-1150 M/S: 19-16

Please find enclosed the set of analytical results for the 4 sample(s) submitted to the Environmental Analysis Laboratory on 26-SEP-1997 by FREDERICKSON.

All samples were received in good condition with proper paperwork, unless otherwise indicated.

The samples indicated in this report will be discarded in 22 days. These samples may be held for longer periods upon request.

Method References

HG1:	EPA Method 245.5 (Manual Cold Vapor Technique).
VOA1-60:	SW-846 Method 8260A
AS1-GF:	EPA Method 206.2 (Atomic Absorption, furnace technique), Digestion per SW-846 Method 3050
SE1-GF:	EPA Method 270.2 (Atomic Absorption, furnace technique), Digestion by SW-846 Method 3050.
TCLP-SE:	EPA Methods 270.2 (Atomic Absorption, furnace technique). Extraction by SW-846 Method 1311 (TCLP).
TCLP-AS:	EPA Methods 206.2 (Atomic Absorption, furnace technique). Extraction by SW-846 Method 1311 (TCLP).
PH1:	SW-846 Method 9045A (Electrometric)
DRYWEIGHT:	SW-846 Method 1311 (Percent Solids Determination, section 7.1.1).
TCLP:	EPA Method 200.7 (Inductively Coupled Plasma). Extraction by SW-846 Method 1311 (TCLP).
PCB1:	SW-846 Method 8080A (Modified for capillary column).
3050-14:	EPA Method 200.7 (Inductively Coupled Plasma). Digestion by SW-846 Method 3050.
WTPH-O1:	WDOE TPH Analytical Methods for Soil and Water (EPA Method 418.1 - Modified)
TCLP-HG:	EPA Method 245.1 (Manual Cold Vapor Technique). Extraction by SW-846 Method 1311 (TCLP).

All raw data and copies of results are kept on file in the Environmental Analysis Laboratory. If you have any questions or require additional information, please contact the Environmental Analysis Laboratory on 773-8934.

Reviewed by:

Dale Meland
Orgn.: 9-4190

EAL# 32346 Matrix: SOIL_SEDIM
Description : 584 MH-1-E
Sampling Site : North Boeing Field Miscellaneous Site
Sample Date : 26-SEP-1997 at 11:05
Received by lab: 27-SEP-1997 at 12:32 Status: Authorized

Test Name	Component Name	Result
HG1	Mercury in soil/sediment	2.1 mg/kg
VOA1-60	GC-MS results found at end of report	
AS1-GF	Arsenic (Total)	22 mg/kg
SE1-GF	Selenium (Total)	<0.77 mg/kg
TCLP-SE	Selenium	<15.300 ug/L
TCLP-AS	Arsenic	27 ug/L
PH1	Soil/Solid pH (in water)	7.61
DRYWEIGHT	Dry weight (%)	85.56 %
TCLP	Chromium	<0.060 mg/L
	Cadmium	<0.040 mg/L
	Lead	0.61 mg/L
	Silver	<0.030 mg/L
	Barium	0.46 mg/L
PCB1	Sample Preparation	Extraction and Acid Wash
	Arochlor 1232	<0.05 mg/Kg
	Arochlor 1016/1242	<0.05 mg/Kg
	Arochlor 1248	<0.05 mg/Kg
	Arochlor 1254	51 mg/Kg
	Arochlor 1260	<0.05 mg/Kg
	Arochlor 1262	<0.05 mg/Kg
	Total PCB	51 mg/Kg
	TCMX (Surrogate)	135.0 % Recovery
	DCBP (Surrogate)	139.0 % Recovery
3050-14	Chromium (Total)	63 mg/kg
	Copper (Total)	67 mg/kg
	Nickel (Total)	45 mg/kg
	Cadmium (Total)	7.6 mg/kg
	Lead (Total)	340 mg/kg
	Zinc (Total)	300 mg/kg
	Silver (Total)	<0.17 mg/kg
	Aluminum (Total)	8900 mg/kg
	Barium (Total)	37 mg/kg
	Calcium (Total)	4600 mg/kg
	Cobalt (Total)	110 mg/kg
	Iron (Total)	41000 mg/kg

EAL LABORATORY REPORT NO.: 9-4190-LAB-3920 (continued)

Test Name	Component Name	Result
	Magnesium (Total)	3500 mg/kg
	Molybdenum (Total)	5.0 mg/kg
WTPH-O1	Heavy Petroleum Oils	809.7 mg/kg
TCLP-HG	Mercury	<0.500 ug/l

Analytical Resources, Incorporated
Analytical Chemists and Consultants

17 September 1998

Joan McGilton
The Boeing Company
Shared Services Group
P.O. Box 3707, MS 7A-XA
Seattle, WA 98124-2207

RE: Project: NBF PCBs / Landau Project #25082.52 / ARI Job Y291

Dear Joan:

Please find enclosed original chain of custody (COC) records and analytical results for the above referenced project. Eleven soil samples and one equipment wipe blank were received in good condition from Landau Associates, Inc. on August 18, 1998.

Samples were pre-screened by GC/ECD to determine appropriate extraction levels. All extracts were cleaned up with acid and mercury to eliminate chromatographic interferences. Several samples required extract dilution and reanalysis to quantitate all Aroclors within the curve range of the GC/ECD.

No other complications were noted for this delivery group. Quality control analysis results are included for your review. Copies of the reports and all associated raw data will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC

Jennifer M. Baier
Project Manager
Jennifer@arilabs.com

JMB/jb
Enclosure

cc: Deborah Ladd, Landau Associates, Inc. (Edmonds, WA)

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SOIL AROCLOR SURROGATE SUMMARY

Matrix: Wipe

QC Report No: Y291
Project: NBF PCBs
25082.52

LIMS ID	Lab ID	Client ID	DCBP	#	TCMX	#	TOT OUT
98-17039MB	082698MB	Method Blank	101%		99.5%		0
98-17039SB	082698SB	Lab Control	90.0%		85.0%		0
98-17039	Y291L	Equipment Blank 4	94.5%		89.9%		0

	QC LIMITS
(TCMX) = Tetrachloro-m-xylene	(33-134)
(DCBP) = Decachlorobiphenyl	(43-155)

\# Column to be used to flag recovery values

* Values outside of required QC limits

D Surrogate Compound diluted out

FORM-II PCB

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ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: Equipment Blank 4

Lab Sample ID: Y291L
LIMS ID: 98-17039
Matrix: Wipe

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Sampled: 08/18/98
Date Received: 08/18/98

Data Release Authorized:
Reported: 08/31/98

Date extracted: 08/26/98
Date analyzed: 08/28/98
Sample Amount: 1.00 Wipe
Final Ext Vol: 10 mL

GPC Cleanup: No
Florisil Cleanup: No
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1

Reported in Total ug/Sample

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	1.0 U
53469-21-9	Aroclor 1242	1.0 U
12672-29-6	Aroclor 1248	1.0 U
11097-69-1	Aroclor 1254	1.0 U
11096-82-5	Aroclor 1260	1.0 U
11104-28-2	Aroclor 1221	2.0 U
11141-16-5	Aroclor 1232	1.0 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	94.5%
Tetrachlorometaxylene	89.9%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

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ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: Method Blank

Lab Sample ID: Y291MB
LIMS ID: 98-17039
Matrix: Wipe

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 08/31/98

Date extracted: 08/26/98
Date analyzed: 08/28/98
Sample Amount: 1.00 Wipe
Final Ext Vol: 10 mL

GPC Cleanup: No
Florisil Cleanup: No
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1

Reported in Total ug/Sample

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	1.0 U
53469-21-9	Aroclor 1242	1.0 U
12672-29-6	Aroclor 1248	1.0 U
11097-69-1	Aroclor 1254	1.0 U
11096-82-5	Aroclor 1260	1.0 U
11104-28-2	Aroclor 1221	2.0 U
11141-16-5	Aroclor 1232	1.0 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	101%
Tetrachlorometaxylene	99.5%

Data Qualifiers

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E Indicates a value above the linear range of the detector. Dilution Required
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ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: CB-0584-131898-MAT

Lab Sample ID: Y291A
LIMS ID: 98-17028
Matrix: Sediment

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Sampled: 08/18/98
Date Received: 08/18/98

Data Release Authorized:
Reported: 09/16/98

Date extracted: 08/31/98
Date analyzed: 09/01/98

Sample Amount: 4.13 g-dry-wt
Final Ext Vol: 40 mL
pH: 8.0

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: Yes
Conc/Dilution Factor: 1:1
Percent Moisture: 17.8%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	970 U
53469-21-9	Aroclor 1242	970 U
12672-29-6	Aroclor 1248	970 U
11097-69-1	**Aroclor 1254**	**36,000**
11096-82-5	Aroclor 1260	970 U
11104-28-2	Aroclor 1221	1,900 U
11141-16-5	Aroclor 1232	970 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	88.3%
Tetrachlorometaxylene	98.2%

Data Qualifiers

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NA Indicates compound was not analyzed.
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NV Indicates no value reportable - see additional analyses.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

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ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: CB-0565-081898-MAT

Lab Sample ID: Y291D
LIMS ID: 98-17031
Matrix: Sediment

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Sampled: 08/18/98
Date Received: 08/18/98

Data Release Authorized:
Reported: 09/16/98

Date extracted: 08/31/98
Date analyzed: 09/07/98

Sample Amount: 9.10 g-dry-wt
Final Ext Vol: 4.0 mL
pH: 8.5

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: Yes
Conc/Dilution Factor: 1:1
Percent Moisture: 24.5%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	44 U
53469-21-9	Aroclor 1242	44 U
12672-29-6	Aroclor 1248	44 U
11097-69-1	**Aroclor 1254**	**93**
11096-82-5	**Aroclor 1260**	**38 J**
11104-28-2	Aroclor 1221	88 U
11141-16-5	Aroclor 1232	44 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	67.5%
Tetrachlorometaxylene	73.4%

Data Qualifiers

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ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: CD-0581-081898-MAT

Lab Sample ID: Y291E
LIMS ID: 98-17032
Matrix: Sediment

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Sampled: 08/18/98
Date Received: 08/18/98

Data Release Authorized:
Reported: 09/16/98

Date extracted: 08/31/98
Date analyzed: 09/07/98

Sample Amount: 9.28 g-dry-wt
Final Ext Vol: 4.0 mL
pH: 7.9

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: Yes
Conc/Dilution Factor: 1:1
Percent Moisture: 23.0%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	43 U
53469-21-9	Aroclor 1242	43 U
12672-29-6	Aroclor 1248	43 U
11097-69-1	**Aroclor 1254**	**290**
11096-82-5	**Aroclor 1260**	**310**
11104-28-2	Aroclor 1221	86 U
11141-16-5	Aroclor 1232	43 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	108%
Tetrachlorometaxylene	80.0%

Data Qualifiers

J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
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D	Indicates the surrogate was diluted out.
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ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: CB-0584-081898-MAT

Lab Sample ID: Y291G
LIMS ID: 98-17034
Matrix: Sediment

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Sampled: 08/18/98
Date Received: 08/18/98

Data Release Authorized:
Reported: 09/16/98

Date extracted: 08/31/98
Date analyzed: 09/01/98

Sample Amount: 3.91 g-dry-wt
Final Ext Vol: 40 mL
pH: 8.0

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: Yes
Conc/Dilution Factor: 1:1
Percent Moisture: 22.0%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	1,000 U
53469-21-9	Aroclor 1242	1,000 U
12672-29-6	Aroclor 1248	1,000 U
11097-69-1	**Aroclor 1254**	**31,000**
11096-82-5	Aroclor 1260	1,000 U
11104-28-2	Aroclor 1221	2,000 U
11141-16-5	Aroclor 1232	1,000 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	91.4%
Tetrachlorometaxylene	99.7%

Data Qualifiers

J	Indicates an estimated value when that result is less than the calculated detection limit.
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ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: Method Blank

Lab Sample ID: Y291MB
LIMS ID: 98-17028
Matrix: Sediment

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 09/16/98

Date extracted: 08/31/98
Date analyzed: 09/01/98

Sample Amount: 5.00 g-dry-wt
Final Ext Vol: 40 mL
pH: NA

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: Yes
Conc/Dilution Factor: 1:1
Percent Moisture: NA

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	800 U
53469-21-9	Aroclor 1242	800 U
12672-29-6	Aroclor 1248	800 U
11097-69-1	Aroclor 1254	800 U
11096-82-5	Aroclor 1260	800 U
11104-28-2	Aroclor 1221	1,600 U
11141-16-5	Aroclor 1232	800 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	85.5%
Tetrachlorometaxylene	95.6%

Data Qualifiers

J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
B	Found in associated method blank
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.
NV	Indicates no value reportable - see additional analyses.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Lab Sample ID: Y291
LIMS ID: 98-17028
Matrix: Sediment

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52

Data Release Authorized:
Reported: 09/16/98

LABORATORY CONTROL SAMPLE SPIKE RECOVERY
Date extracted: 08/31/98

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
LABORATORY CONTROL SAMPLE			
Aroclor 1242	7740	8000	96.8%

Aroclor Surrogate Recoveries

Decachlorobiphenyl	89.0%
Tetrachlorometaxylene	99.5%

Values Reported in Total ug/kg Dry Weight

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: Method Blank

Lab Sample ID: Y291MB
LIMS ID: 98-17029
Matrix: Sediment

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 09/16/98

Date extracted: 08/31/98
Date analyzed: 09/07/98

Sample Amount: 12.0 g-dry-wt
Final Ext Vol: 4.0 mL
pH: NA

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: Yes
Conc/Dilution Factor: 1:1
Percent Moisture: NA

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	33 U
53469-21-9	Aroclor 1242	33 U
12672-29-6	Aroclor 1248	33 U
11097-69-1	Aroclor 1254	33 U
11096-82-5	Aroclor 1260	33 U
11104-28-2	Aroclor 1221	67 U
11141-16-5	Aroclor 1232	33 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	84.7%
Tetrachlorometaxylene	86.7%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
NV Indicates no value reportable - see additional analyses.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Lab Sample ID: Y291
LIMS ID: 98-17029
Matrix: Sediment

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52

Data Release Authorized:
Reported: 09/16/98

LABORATORY CONTROL SAMPLE SPIKE RECOVERY
Date extracted: 08/31/98

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
LABORATORY CONTROL SAMPLE			
Aroclor 1242	294	333	88.2%

Aroclor Surrogate Recoveries

Decachlorobiphenyl	89.5%
Tetrachlorometaxylene	92.5%

Values Reported in Total ug/kg Dry Weight

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: CB-0565-081898-MAT
MATRIX SPIKE

Lab Sample ID: Y291DMS
LIMS ID: 98-17031
Matrix: Sediment

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Sampled: 08/18/98
Date Received: 08/18/98

Data Release Authorized:
Reported: 09/16/98

Date extracted: 08/31/98
Date analyzed: 09/07/98

Sample Amount: 9.11 g-dry-wt
Final Ext Vol: 4.0 mL
pH: 8.5

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: Yes
Conc/Dilution Factor: 1:1
Percent Moisture: 24.5%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	44 U
53469-21-9	Aroclor 1242	---
12672-29-6	Aroclor 1248	44 U
11097-69-1	**Aroclor 1254**	**100**
11096-82-5	**Aroclor 1260**	**41 J**
11104-28-2	Aroclor 1221	88 U
11141-16-5	Aroclor 1232	44 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	70.9%
Tetrachlorometaxylene	78.2%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
NV Indicates no value reportable - see additional analyses.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: CB-0565-081898-MAT
SPIKE DUPLICATE

Lab Sample ID: Y291DMSD
LIMS ID: 98-17031
Matrix: Sediment

QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Sampled: 08/18/98
Date Received: 08/18/98

Data Release Authorized:
Reported: 09/16/98

Date extracted: 08/31/98
Date analyzed: 09/07/98

Sample Amount: 9.06 g-dry-wt
Final Ext Vol: 4.0 mL
pH: 8.5

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: Yes
Conc/Dilution Factor: 1:1
Percent Moisture: 24.5%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	44 U
53469-21-9	Aroclor 1242	---
12672-29-6	Aroclor 1248	44 U
11097-69-1	**Aroclor 1254**	**94**
11096-82-5	**Aroclor 1260**	**33 J**
11104-28-2	Aroclor 1221	88 U
11141-16-5	Aroclor 1232	44 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	74.9%
Tetrachlorometaxylene	85.4%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
NV Indicates no value reportable - see additional analyses.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Lab Sample ID: Y291D
LIMS ID: 98-17031
Matrix: Sediment

Data Release Authorized:
Reported: 09/16/98

Sample No: CB-0565-081898-MAT
QC Report No: Y291-Boeing Corporate SHEA
Project: NBF PCBs
25082.52
Date Received: 08/18/98

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY
Date extracted: 08/31/98

CONSTITUENT	SAMPLE VALUE	SPIKE FOUND	SPIKE ADDED	% RECOVERY	RPD
MATRIX SPIKE					
Aroclor 1242	< 44.	336.	439	76.5%	
MATRIX SPIKE DUPLICATE					
Aroclor 1242	< 44.	372.	442	84.3%	9.7%

Values Reported in Total ug/kg Dry Weight

LANDAU
ASSOCIATES
INC.

Environmental and Geotechnical Services

MEMORANDUM

TO: Deborah Ladd, Project Manager, Landau Associates, Inc.

FROM: Stacy Pischer, Landau Associates, Inc.

DATE: October 2, 1998

RE: NORTH BOEING FIELD
STORM DRAIN SYSTEM SAMPLING AUGUST 1998
LABORATORY DATA QUALITY EVALUATION

This memorandum provides the results of a data quality evaluation for 90 samples collected from material within the storm drain system at the North Boeing Field between August 6 and August 18, 1998. A data quality evaluation was performed for analyses of polychlorinated biphenyls (PCBs) (EPA method 8081) performed by the Analytical Resources, Inc. (ARI) laboratory located in Seattle, Washington. This data quality evaluation covers ARI data packages Y168, Y179, Y199, Y207, Y232, Y259, Y273, Y288, and Y291.

The data quality evaluation was performed in accordance with the *Storm Drain System Sampling* draft work plan (Landau Associates 1998), and with applicable portions of the U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (EPA 1994).

The evaluation considered the following elements:

- Chain-of-custody records
- Holding times
- Blank results (laboratory, method, and field)
- Surrogate recoveries
- Laboratory matrix spikes and matrix spike duplicates (MS/MSD) (including laboratory control samples)
- Duplicate analyses (field)
- Quantitation limits
- Conclusions and completeness.

Data precision was evaluated through field and matrix spike duplicates. Data accuracy was evaluated through laboratory control samples, surrogate spikes, and matrix spikes. Precision and accuracy were within project-specified control limits with the following discussion.

CHAIN-OF-CUSTODY RECORDS

Signed chain-of-custody records accompanied each data package. All analyses requested were performed.

HOLDING TIMES

For all analyses and all samples, the time between sample collection, extraction, and analysis was determined to be within EPA and project-specified holding times with the following exception. The time between sample collection and extraction for sample CB-0509-081798-MAT was exceeded by 1 day. All results for this sample were qualified as estimated (J, UJ) as shown in Table A.2.1.

SURROGATE SPIKE RECOVERIES

All criteria were met with the following exceptions. The recovery of surrogate decachlorobiphenyl for sample CB-0627-081098-MAT was below current laboratory control limits but within the project specified control limits. The other surrogate for this sample was also low (40 percent) but within current laboratory and project-specified control limits. No qualifiers were assigned.

The recovery of tetrachloro-m-xylene was not reported for sample OWS-0137-081098-MAT; however, the recovery of surrogate decachlorobiphenyl was acceptable so no qualifiers were assigned. Recoveries of surrogates for several samples in data package Y259 were low (39 percent to 54 percent) but within project specified control limits. No qualifiers assigned.

Surrogate recoveries for the MS/MSD pair, CB-0197-08798-MAT, were below the project-specified control limits. The laboratory reextracted and reanalyzed this MS/MSD pair. Both surrogate recoveries for the reanalyses were acceptable. No qualifiers assigned.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

All MS/MSDs were prepared using a project sample. Recoveries and RPDs were within the project-specified control limits with the following exception. The MS recovery for MS/MSD sample CB-0197-08798-MAT was low but within project-specified control limits; however, the MSD recovery was below the project specified control limits. Because of the low MS/MSD recoveries and low surrogate recoveries for this sample, the laboratory reextracted the sample 5 days past the holding time (although the sample was frozen) and reanalyzed the MS/MSD. The recoveries of the second MS/MSD were within project-specified control limits. No qualifiers were assigned.

LABORATORY CONTROL SAMPLE (BLANK SPIKE) RESULTS

All criteria were met. Laboratory control samples were performed with each sample batch. No qualification necessary.

METHOD BLANKS

Method blanks were analyzed with each batch of samples. No contamination was detected in the method blanks.

FIELD BLANKS

Field equipment wipe blanks were collected; however, these blanks were not collected at the frequency specified in the work plan. The work plan specifies that field equipment blanks will be collected at a frequency of at least one per 20 samples, not including QC samples, but not less than one equipment blank per sampling round. Only four equipment wipe blanks were collected for 90 samples. No contamination was detected in any of the four field equipment wipe blanks. No qualifiers were assigned due to lack of field equipment blanks.

FIELD DUPLICATE RESULTS

Only four blind field duplicate samples were collected during this sampling event, which does not meet the project specified criteria of at least one blind field duplicate sample per 20 samples but not less than one blind field duplicate sample per sampling round, as specified in the work plan. RPDs for each of the blind duplicate sample pairs were less than 35 percent, therefore, no qualifiers were assigned. No qualifiers were assigned based on lack of blind field duplicate samples.

REPORTING LIMITS

Project-specified control limits for each of the PCB aroclors were not met for most of the samples. For many of the samples, the reporting limits significantly exceeded the project-specified control limits. The laboratory reports that samples were pre-screened by GC/ECD to determine appropriate extraction levels, which is the cause for many of the raised reporting limits.

OVERALL DATA QUALITY AND COMPLETENESS

Data precision was evaluated through field and matrix spike duplicates. Data accuracy was evaluated through laboratory control samples, surrogate spikes, and matrix spikes. Based on this data quality evaluation, all of the data were determined to be acceptable and no data were rejected. The completeness for this set of data is 100 percent, which meets the project-specified goal of 90 percent.

REFERENCES

EPA. 1994. *Contract Laboratory Program National Functional Guidelines for Organic Data Review.* U.S. Environmental Protection Agency.

Landau Associates. 1998. *Draft Storm Drain System Sampling North Boeing Field Work Plan.*

TABLE A.2.1

SUMMARY OF DATA QUALIFIERS
FOR AUGUST 1998 EVENT GROUNDWATER SAMPLE RESULTS
ARI DATA PACKAGES Y168, Y179, Y199, Y207, Y232, Y259, Y273, Y288, AND Y291

Analyte	Qualifier	Sample Number	Reason
All Aroclors	J, detects UJ, nondetects	CB-0509-081798-MAT	Holding time exceeded by 1 day

J = The analyte is present in the sample; the reported concentration is an estimate.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.

RENTON ENVIRONMENTAL LABORATORY REPORT

HAZARDOUS WASTE REPORT

Lab Id: 00-B369 Field Id No.: PL2SA-1798 565

Analyte	Result	Units	Method #	Analyst	Date	Status
METALS:						
Arsenic:	4.18	mg/Kg	200.7	Linda	5/23/00	
Barium:	67.36	mg/Kg	200.7	Linda	5/23/00	
Cadmium:	< 0.01	mg/Kg	200.7	Linda	5/23/00	
Chromium:	15.15	mg/Kg	200.7	Linda	5/23/00	
Copper:	47.05	mg/Kg	200.7	Linda	5/23/00	
Lead:	133.30	mg/Kg	200.7	Linda	5/23/00	FD
Mercury:	< 0.1	mg/Kg	200.7	Linda	5/23/00	
Nickel:	17.21	mg/Kg	200.7	Linda	5/23/00	
Selenium:	< 0.05	mg/Kg	200.7	Linda	5/23/00	
Silver:	< 0.01	mg/Kg	200.7	Linda	5/23/00	
Zinc:	227.50	mg/Kg	200.7	Linda	5/23/00	
Iron:	12,400.0	mg/Kg	200.7	Linda	5/23/00	
Calcium:	5,628.00	mg/Kg	200.7	Linda	5/23/00	
Thallium:	< 0.05	mg/Kg	200.7	Linda	5/23/00	
Sodium:	582.90	mg/Kg	200.7	Linda	5/23/00	
Magnesium:	3,004.00	mg/Kg	200.7	Linda	5/23/00	
Aluminum:	7,457.00	mg/Kg	200.7	Linda	5/23/00	
ORGANICS:						
Benzene:	< 10	ppb	602/624	Ed	5/23/00	
Toluene:	< 10	ppb	602/624	Ed	5/23/00	
Ethylbenzene:	< 10	ppb	602/624	Ed	5/23/00	
Methylene Chloride:	< 10	ppb	601/624	Ed	5/23/00	
1,1 Dichloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Chloroform:	< 10	ppb	601/624	Ed	5/23/00	
1,1,1 Trichloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Trichloroethene:	< 10	ppb	601/624	Ed	5/23/00	
Tetrachloroethene:	< 10	ppb	601/624	Ed	5/23/00	
1,1,2,2 Tetrachloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Acetone:	< 100	ppb	602/624	Ed	5/23/00	
o-Xylene:	< 10	ppb	602/624	Ed	5/23/00	
m&p-Xylene:	< 10	ppb	602/624	Ed	5/23/00	
OTHER TESTS:						
PCB:	0.05	mg/Kg	8080	KSC	5/26/00	
Total Pet. Hydrocarbons:	272	ppm	418.1	Mike	5/25/00	

Report prepared by: _____ Date: 5/26/00

Report approved by: Linda Chicquette Date: 5/26/00

RENTON ENVIRONMENTAL LABORATORY REPORT

HAZARDOUS WASTE REPORT

Lab Id: 00-B370 Field Id No.: PL2SA-1798 578

Analyte	Result	Units	Method #	Analyst	Date	Status
METALS:						
Arsenic:	27.57	mg/Kg	200.7	Linda	5/23/00	
Barium:	70.53	mg/Kg	200.7	Linda	5/23/00	
Cadmium:	0.15	mg/Kg	200.7	Linda	5/23/00	
Chromium:	58.61	mg/Kg	200.7	Linda	5/23/00	
Copper:	104.90	mg/Kg	200.7	Linda	5/23/00	
Lead:	118.90	mg/Kg	200.7	Linda	5/23/00	FD
Mercury:	< 0.1	mg/Kg	200.7	Linda	5/23/00	
Nickel:	27.86	mg/Kg	200.7	Linda	5/23/00	
Selenium:	< 0.05	mg/Kg	200.7	Linda	5/23/00	
Silver:	< 0.01	mg/Kg	200.7	Linda	5/23/00	
Zinc:	339.40	mg/Kg	200.7	Linda	5/23/00	
Iron:	10,080.0	mg/Kg	200.7	Linda	5/23/00	
Calcium:	3,515.00	mg/Kg	200.7	Linda	5/23/00	
Thallium:	< 0.05	mg/Kg	200.7	Linda	5/23/00	
Sodium:	618.20	mg/Kg	200.7	Linda	5/23/00	
Magnesium:	2,153.00	mg/Kg	200.7	Linda	5/23/00	
Aluminum:	7,268.00	mg/Kg	200.7	Linda	5/23/00	
ORGANICS:						
Benzene:	< 10	ppb	602/624	Ed	5/23/00	
Toluene:	< 10	ppb	602/624	Ed	5/23/00	
Ethylbenzene:	< 10	ppb	602/624	Ed	5/23/00	
Methylene Chloride:	< 10	ppb	601/624	Ed	5/23/00	
1,1 Dichloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Chloroform:	< 10	ppb	601/624	Ed	5/23/00	
1,1,1 Trichloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Trichloroethene:	< 10	ppb	601/624	Ed	5/23/00	
Tetrachloroethene:	< 10	ppb	601/624	Ed	5/23/00	
1,1,2,2 Tetrachloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Acetone:	< 100	ppb	602/624	Ed	5/23/00	
o-Xylene:	< 10	ppb	602/624	Ed	5/23/00	
m&p-Xylene:	< 10	ppb	602/624	Ed	5/23/00	
OTHER TESTS:						
PCB:	0.42	mg/Kg	8080	KSC	5/26/00	
Total Pet. Hydrocarbons:	1,110	ppm	418.1	Mike	5/25/00	

Report prepared by: _____ Date: 5/26/00

Report approved by: Linda Chiquette Date: 5/26/00

RENTON ENVIRONMENTAL LABORATORY REPORT

HAZARDOUS WASTE REPORT

Lab Id: 00-B371 Field Id No.: PL2SA-1798 581

Analyte	Result	Units	Method #	Analyst	Date	Status
METALS:						
Arsenic:	16.95	mg/Kg	200.7	Linda	5/23/00	
Barium:	74.39	mg/Kg	200.7	Linda	5/23/00	
Cadmium:	2.12	mg/Kg	200.7	Linda	5/23/00	
Chromium:	62.26	mg/Kg	200.7	Linda	5/23/00	
Copper:	117.40	mg/Kg	200.7	Linda	5/23/00	
Lead:	127.90	mg/Kg	200.7	Linda	5/23/00	FD
Mercury:	< 0.1	mg/Kg	200.7	Linda	5/23/00	
Nickel:	43.92	mg/Kg	200.7	Linda	5/23/00	
Selenium:	< 0.05	mg/Kg	200.7	Linda	5/23/00	
Silver:	< 0.01	mg/Kg	200.7	Linda	5/23/00	
Zinc:	334.20	mg/Kg	200.7	Linda	5/23/00	
Iron:	23,090.0	mg/Kg	200.7	Linda	5/23/00	
Calcium:	3,800.00	mg/Kg	200.7	Linda	5/23/00	
Thallium:	< 0.05	mg/Kg	200.7	Linda	5/23/00	
Sodium:	597.10	mg/Kg	200.7	Linda	5/23/00	
Magnesium:	2,280.00	mg/Kg	200.7	Linda	5/23/00	
Aluminum:	7,292.00	mg/Kg	200.7	Linda	5/23/00	
ORGANICS:						
Benzene:	< 10	ppb	602/624	Ed	5/23/00	
Toluene:	< 10	ppb	602/624	Ed	5/23/00	
Ethylbenzene:	< 10	ppb	602/624	Ed	5/23/00	
Methylene Chloride:	< 10	ppb	601/624	Ed	5/23/00	
1,1 Dichloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Chloroform:	< 10	ppb	601/624	Ed	5/23/00	
1,1,1 Trichloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Trichloroethene:	< 10	ppb	601/624	Ed	5/23/00	
Tetrachloroethene:	< 10	ppb	601/624	Ed	5/23/00	
1,1,2,2 Tetrachloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Acetone:	< 100	ppb	602/624	Ed	5/23/00	
o-Xylene:	< 10	ppb	602/624	Ed	5/23/00	
m&p-Xylene:	< 10	ppb	602/624	Ed	5/23/00	
OTHER TESTS:						
PCB:	0.97	mg/Kg	8080	KSC	5/26/00	
Total Pet. Hydrocarbons:	329	ppm	418.1	Mike	5/25/00	

Report prepared by: _____ Date: 5/26/00

Report approved by: Linda C Chicquette Date: 5/26/00

RENTON ENVIRONMENTAL LABORATORY REPORT

HAZARDOUS WASTE REPORT

Lab Id: 00-B372 Field Id No.: PL2SA-1798 584

Analyte	Result	Units	Method #	Analyst	Date	Status
METALS:						
Arsenic:	59.19	mg/Kg	200.7	Linda	5/23/00	
Barium:	101.40	mg/Kg	200.7	Linda	5/23/00	
Cadmium:	4.28	mg/Kg	200.7	Linda	5/23/00	
Chromium:	89.81	mg/Kg	200.7	Linda	5/23/00	
Copper:	118.50	mg/Kg	200.7	Linda	5/23/00	
Lead:	817.20	mg/Kg	200.7	Linda	5/23/00	FD
Mercury:	< 0.1	mg/Kg	200.7	Linda	5/23/00	
Nickel:	50.19	mg/Kg	200.7	Linda	5/23/00	
Selenium:	< 0.05	mg/Kg	200.7	Linda	5/23/00	
Silver:	< 0.01	mg/Kg	200.7	Linda	5/23/00	
Zinc:	676.40	mg/Kg	200.7	Linda	5/23/00	
Iron:	27,820.0	mg/Kg	200.7	Linda	5/23/00	
Calcium:	4,071.00	mg/Kg	200.7	Linda	5/23/00	
Thallium:	< 0.05	mg/Kg	200.7	Linda	5/23/00	
Sodium:	601.60	mg/Kg	200.7	Linda	5/23/00	
Magnesium:	2,205.00	mg/Kg	200.7	Linda	5/23/00	
Aluminum:	7,564.00	mg/Kg	200.7	Linda	5/23/00	
ORGANICS:						
Benzene:	< 10	ppb	602/624	Ed	5/23/00	
Toluene:	< 10	ppb	602/624	Ed	5/23/00	
Ethylbenzene:	< 10	ppb	602/624	Ed	5/23/00	
Methylene Chloride:	< 10	ppb	601/624	Ed	5/23/00	
1,1 Dichloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Chloroform:	< 10	ppb	601/624	Ed	5/23/00	
1,1,1 Trichloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Trichloroethene:	< 10	ppb	601/624	Ed	5/23/00	
Tetrachloroethene:	< 10	ppb	601/624	Ed	5/23/00	
1,1,2,2 Tetrachloroethane:	< 10	ppb	601/624	Ed	5/23/00	
Acetone:	< 100	ppb	602/624	Ed	5/23/00	
o-Xylene:	< 10	ppb	602/624	Ed	5/23/00	
m&p-Xylene:	< 10	ppb	602/624	Ed	5/23/00	
OTHER TESTS:						
PCB:	213	mg/Kg	8080	KSC	5/26/00	
Total Pet. Hydrocarbons:	348	ppm	418.1	Mike	5/25/00	

Report prepared by: _____ Date: 5/26/00

Report approved by: Linda E. Ricquetta Date: 5/26/00